

## RESPONSE 2 COMMENTS RECEIVED FROM INDUSTRY REVIEW

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### Ghulam Mujtaba

Page 2 -346- 1-Second paragraph- Insert Period"." After pdf.

**RESPONSE:** Agree to change

Page 2 -3461-Second paragraph- Insert the word " aggressive" to read: "lower aggressive environmental condition."

**RESPONSE:** Agree to change

346-2.3 (1)(b)- Third line - Change: "use" to " used".

**RESPONSE:** Agree to change

346-2.3 (c)- Second and Third lines- The word "Portland" has been spelled with uppercase letter "P". In other part of the documents sometimes lowercase letter has been used. Be consistent throughout the document. See 346-1 and 346-2.3(3)(c) .

**RESPONSE:** All instances of "Portland" should be spelled with a lowercase "p".

346-2.3 (3)(b)- Last sentence- Change: "use" to " used".

**RESPONSE:** Agree to change

346-3.2 second paragraph: Change the last part of the first sentence to read: "Provide drilled shaft concrete mix with the slumps in the range of 7-9 inches to ensure that the concrete maintains a minimum slump of 4 inches throughout the concrete placement elapsed time."

**RESPONSE:** Disagree, leave sentence as it is written. Look to change slump of 4 inches to slump of 5 inches in the future, if research seems to agree.

346-3.3 4<sup>th</sup> paragraph-11<sup>th</sup> line- Change 6-hours to "6 hours".

**RESPONSE:** Agree to change

346-5 Last Footnote of the Table 5: Change the foot note to read: For the compressive strength testing of precast concrete the use of 4 x 8- in [102 x 203-mm] test cylinders are allowed, provided that it meets the requirements of 450- 4.1.

**RESPONSE:** Agree to change

346-6.1- Fifth paragraph- 6<sup>th</sup> line -Insert the word "materials" after "cementitious".

**RESPONSE:** Agree to change

Sections 346-7.7 and 7.8- The target range has been mentioned in these Sub-articles. I do not know if target range has been defined in 346. Provide an additional column in Table 6 to define "Target range".

**RESPONSE:** Agree, Change table 6 to add two columns.

346-8- First line -Insert the word "materials" after "cementitious". It should be noted that water cementitious materials ratio does not belong to sampling and testing. Change the sentence to read: "Quality control sampling, testing, and calculation, air content,.....

**RESPONSE:** Agree to insert wording "... water to cementitious materials ratio calculation and may include unit weight."

346-9.1- Second paragraph- Last line -Change "breaking the cylinder" to "testing the compressive strength of cylinders".

**RESPONSE:** Agree to change

346-9.2- third Line -Change "Table 8 " to "Table 9".

**RESPONSE:** Agree to change

346-9.2- last sentence- first paragraph: It has mentioned if there is no verification, then the LOT goes to resolution in accordance with 346-9. Nowhere in 346-9 it has addressed the absence of verification and use of resolution.

**RESPONSE:** Agree that there needs to be clarification and change to 346-9.5

346-9.2.1 Second and third paragraphs- -Change "breaks" to "compressive strength test results".

**RESPONSE:** Agree to change

346-9.6- Delete "at his discretion" from "346-8 at his discretion". Explain the requirements of IV.

**RESPONSE:** Agree to change verbiage.

346-10.1 Second paragraph- -Change "Engineers approval" to "Engineer's approval" and "28 day compressive strength" to "28-day compressive strength".

**RESPONSE:** Agree.

346-10.4- -Change "3-days" to "3 days".

**RESPONSE:** Agree.

36- 11.6.1 modify the first equation to read:

Equivalent 28-day strength,  $f'c(28) = 1/F$  (Average Core Strength) x 100.

**RESPONSE:** Agree.

346-11.6.2 - Last line-Change "Strength measured" to "strength determined"

**RESPONSE:** Agree.

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**Jeff Featherston**

File: 3460000 - Portland Cement Concrete  
Username: Jeff Featherston  
UserEmail: jeff.featherston@gsc.kiewit.com  
UserTel: (954) 205-7741 Cell  
UserFAX: (954) 835-2335  
Date: Sunday, May 22, 2005  
Time: 05:31:15 PM

Comments:

There needs to be a turn around time from the Department for review and comments on

Mass Concrete Plans in the Specification. We have had jobs where a plan was submitted early (Well Before Construction) and we received comments back 58 Days later, just to find out the plan was rejected. This is wrong... As far as I know, the Department has one person that reviews and comments on these plans in SMO after each District reviews the plan and forwards it to them.

So removing the 10 day turn around time on the Mass Concrete Plan review is NOT a good thing to do in my view.

Thanks,

Jeff Featherston

**RESPONSE:** The Mass Concrete Plan is part of the Contractors Quality Control Plan and should have the same times as the QCP for review. A Construction Bulletin will address this issue to try and expedite this process.

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**Rodney Powers**

My only comment on 346 is as follows:

I concur with the revisions and suggest only one minor modification:

In Section 346-9.1, change, "Transport the QC samples," to, "Deliver the QC samples..."

That's all,

Rod

**RESPONSE:** Agree.

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**Jennifer Taylor**

File: 3460000 - Portland Cement Concrete  
Username: Jennifer Taylor  
UserEmail: jennifer.taylor@dot.state.fl.us  
UserTel: sc 373-3471  
Date: Friday, June 10, 2005  
Time: 07:15:04 AM

Comments:

346 Concrete

Table 1

Bridge Superstructure > Component column does not need to say superstructure in Precast / Prestress nor in Elements ... already defined in above heading.

Also C.I.P. does not need superstructure, slabs or barriers (all are superstructures), previously defined in above title.

Substructure > Component column only need say "All Structures" or "All Elements".

Table should be on one page for clarity.

**RESPONSE:** Agree, Start Table one on a new page and just have "Cast in Place" and "All Elements"

Section 2.3(1) Mass a. Flyash replacement: in order to reduce high core temps, it was previously discussed to increase flyash content. I suggest modify sentence/paragraph to include ... if Mass temp control plan model anticipates conc core temp exceeding 175 F deg ( or other agreeable temp), then must use higher % flyash replacement ( say 35 to 50 %) to reduce likelihood of DEF formation....

**RESPONSE:** Controversial Issue and not enough research data to support specification change.

Section 2.5.3.1: Should say same as 2.5.3 in 2004 Edition. I think it was easier read and understood.

**RESPONSE:** This modification has previously been approved by FHWA.

Section 3.1:

(d) does not include Class VI concrete

(e) does not include Prestress

**RESPONSE:** Agree and Agree

Section 3.3 > 4th paragraph: beginning ... and continue reading until the maximum differential and the maximum core temperature are decreasing .... should be added, since does no good to have one without the other, especially whenever the contractor adds blankets to reduce differential then removes forms and insulation while the core increases!

**RESPONSE:** Agree

Table 3: max W/C does not include Class VI \*\* @ .35 with SF or MetaK.

**RESPONSE:** Agree

Section 6.2: italic verbiage ???

**RESPONSE:** *Verbiage in Italics indicates Verbiage that is inserted.*

Section 6.2.1: add ... aggregate of same size .. and type.

**RESPONSE:** Agree.

Section 9.1:

Transport QC samples same time as VT samples IAW ASTM C 31 ... instead of 48 hours, so that if standards change specification will mimic.

... within 72 hours of breaking cylinders > should change to testing cylinders.

... the Dept will average together the QC and VT data & based on the combined avg @ 28 days ... apply the Table 8 differences to the individual QC and VT averages. I have a hard time understanding current verbiage, maybe can improve.

**RESPONSE:** Agree, and we will try to clear up the verbiage...

Section 9.2: All QC activities etc. will be confirmed verified by Dept.

**RESPONSE:** Agree

Section 10.4 Core Conditioning:

WET mimics 28-day cylinder condition, which if broke low is the reason we cored!

If engineer chooses DRY ... according to ASTM C - 42 may need up to 7-days before testing.

If 7-days is applied, then could upset section 11.6 (which might be good antidote for testing dry to begin with!).

**RESPONSE:** Disagree and leave as is.

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**David Westcott**

In our review of the proposed specification revision it appears that there have been several changes that were not highlighted. We assume that thus was an oversight and not an attempt to possibly pass through changes without being reviewed.

It also appears that several of the revisions were simply cut and pasted from other specifications without thorough review, ie: 346-2.5.3.2. Second sentence "The use of flowing concrete admixtures is limited to the construction of precast/prestressed concrete products".

**RESPONSE:** Yes because the prestress yard has tighter controls over the batching and transporting of concrete due to a short haul time. In an effort to clarify subsection 346-2.5.3.2 we will change the heading of this subsection to "Flowing Concrete Admixtures for Precast and Prestressed Concrete"

346.2.5.3.2 Flowing Concrete Admixtures:

The use of flowing concrete admixtures is limited to the construction of precast/prestressed concrete products. Why limited to precast/prestressed?

**RESPONSE:** As mentioned the control of batching and transporting of concrete is easier controlled in the Prestressed precast yard.

Add flowing concrete admixture at the ready mixed concrete production batch plant. Why limit admixture addition to the plant? Job site addition may be needed.

**RESPONSE:** Under specific jobs and with supplemental agreement it may be used.

Field demonstration batches have been added here after being taken out of the specification earlier for HRWR mixes. This seems to be taking a step back not forward.

**RESPONSE:** Field demonstrations are needed until the contractor and Department personnel become familiar with the use of this material. Initial demonstration will be needed for the first mix after that the mix will not needed to be demonstrated. A new mix will.

Slump loss tests are implemented in this section, it appears for the purpose of establishing a time limit on the proposed mix design. Why not just leave the time limits as currently indicated in 346-7.6?

**RESPONSE:** The purpose of these time limits is to determine the cut off time allowed for placement of the entire load of concrete. This time does not correlate with the typical

## haul time allowed in 346-7.6

Rapid Chloride Permeability tests are indicated here; however this specification would apply to any flowing concrete, ie: Class I, II, IV, etc.

Why? What are the acceptance criteria?

This also contrary to other sections which are allowing the use of surface resistivity instead of RCP.

**RESPONSE:** The RCP test cylinders are for information purposes to the Department only they are not for acceptance of the concrete.

## 346-3.1 General

(d) Includes a surface resistivity option for silica fume or metakaolin concrete. Suggest clarification of the second paragraph to reflect that samples are prior to mix design approval from the laboratory or field trial batch.

**RESPONSE:** Agree, will change the first sentence of the last paragraph to read "In lieu of rapid chloride permeability test, and prior to mix design approval, submit three tests, ..."

(d) The given target (37 K Ohm-cm) does not seem to match the data that came from Mario Paredes research. According to his data the formula indicates that the equivalent resistivity to 1000 coulomb is 20.25 K Ohm-cm. Why is it different?

**RESPONSE:** A factor must be multiplied by these numbers to account for the geometry of the cylinders being tested.

## 346-3.3 Mass Concrete

2<sup>nd</sup> paragraph requires that the "Specialty Engineer will select the concrete design mix proportions that will generate the lowest maximum temperatures possible." In every instance this mixture would contain the cement with the lowest 7 day heat of hydration available in Florida (or does "possible" mean anywhere in the world), coupled with flyash (slag would be eliminated from mass concrete) at the maximum replacement level with the maximum dose of liquid nitrogen. In most instances this would far exceed the thermal requirements for the structure being cast, and add significant unnecessary cost to mass concrete. This requirement would result in the rejection of all currently existing mass concrete mix designs (except 1). Suggest striking the entire sentence.

**RESPONSE:** Will change to state, "The Specialty Engineer will select the concrete design mix proportions that will generate the lowest maximum temperature to ensure the 35°F temperature differential is not exceeded."

## 346-6.2 Concrete Mix Design

1<sup>st</sup> paragraph states in part "Perform demonstration batches to ensure complete and thorough placements in complex elements when requested by the engineer." This interpretation could force a demo batch on every mix coming out of every plant when left to the discretion of the engineer. Not clear how this would be managed contractually. Is it a pay item?

**RESPONSE:** The Department would like the option to have the contractor show us how he is going to place concrete in a very complex structure. This all that we are asking here.

The lumps and balls has always been the case but it now states that a "demonstrations batch is needed to ensure complete and thorough placements in complex elements

when requested by the engineer.”

**RESPONSE:** As stated above, the Department would like the option to have the contractor show us how he is going to place concrete in a very complex structure. This all that we are asking here

### 346-6.3 Delivery Certification

Not all concrete production facilities have the capability of producing an electronic delivery ticket. This would lead to concrete being rejected due to a piece of paper.

**RESPONSE:** The Department would like an electronic delivery ticket and will allow 6 months for the industry to implement. An electronic ticket is easier for the inspectors to read and will prevent trucks from being rejected because inspectors cannot verify batch weights.

### 346-9.2 Sampling Frequency for Quality Control Tests

1<sup>st</sup> Paragraph states in part “As a minimum, sample and test concrete for water to cementitious ratio, air content, temperature, slump and compressive strength in accordance with Table 8.” Suggest modifying to Table 9 and revise to calculate water to cementitious ratio.

**RESPONSE:** Will change to read, “As a minimum, sample and test concrete for air content, temperature, slump, calculate the water to cementitious materials ratio and test for compressive strength in accordance with Table 9.”

### 346-9.6 Small Quantities of Concrete

1<sup>st</sup> paragraph states in part that for small quantities of concrete that the “IV compressive strengths results do not meet the design compressive strengths, remove and replace the concrete at no cost to the Department.” Suggest including the evaluation provisions of 346-10 into this section. No concrete should be removed unless it has been evaluated for structural suitability via cores.

**RESPONSE:** Will delete the last sentence and change the second to the last sentence to state, “ In addition, the Engineer may conduct Independent Verification (IV) testing as identified in Section 346-9. In addition we have included verbiage that allows the concrete to be evaluated in accordance with 346-10”

### 346-11.5 Pay Adjustment for Low Strength Concrete

This section has been modified to require that cores be tested prior to 35 days of age to be accepted at the actual core results. Cores tested after 35 days have correction factors applied to the results. Previous versions of 346 have required testing prior to 42 days. Cores obtained from structures that will be dry during service should be cured in accordance with ASTM C42, which requires 5 days conditioning in a plastic bag subsequent to the last core exposure to water from the trimming or coring operation. This would require that the acceptance laboratory notify all concerned parties on the day of the low break in order to allow 2 days to select the core locations, mobilize coring operations, cut the cores, ship to the laboratory and prep the cores for testing. Suggest deleting the 35 day requirement and reinserting 42.

**RESPONSE:** Based on the requirements of the new ASTM C- 42 for the testing of cores we will leave the current verbiage as is with no change.

### 346 – 11.7 Calculating Pay Adjustment

Ties pay reductions to pay items. Suggest modifying to previous fix cost penalties.  
**RESPONSE:** This will not change at this time. This is a pay action issue that is decided by Central Office Construction.

David Westcott  
Technical Service Manager  
CEMEX  
Concrete Products Division  
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### Rinker Material's

#### 346.2.5.3.2 Flowing Concrete Admixtures:

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